

a diseased part, completely separated from the master arm. Electric signals corresponding to instructions given by operating the master arm are transmitted to the slave arm. Usually, the master arm and the slave arm are articulated arms having at least six degrees of freedom of motion. The master-slave manipulator system is a complicated system including a controller for controlling the joints of the articulated arms, an electrical control system, and many parts including wiring lines.

10 The inventors of the present invention proposed previously a simple medical manipulator (robotic forceps) developed by applying robot techniques to a conventional pair of forceps as shown in Fig. 14 in JP2000-350735A ~~(Patent document 1)~~. Referring to Fig. 14, this previously proposed
 15 medical manipulator comprises a control unit 20 including a position controller 23 and an operation controller 24, a connecting unit 30 having one end connected to control unit 20, a working unit 10 connected to the other end of the connecting unit 30 and including support devices 15 and 16
 20 supporting an end effector having operating members 14 for motions with at least two degrees of freedom, and a controller, not shown, for changing the positions of the operating members 14 of the end effector by controlling the support devices 15 and 16 according to instructions given by the position
 25 controller 23 and operating the operating members 14 of the end effector according to instructions given by the operation controller 24.

The inventors of the present invention proposed previously a medical manipulator as shown in Fig. 15 having
 30 degrees of freedom of motion suitable for suture and ligation in JP2002-102248A ~~(Patent document 2)~~. This medical manipulator comprises a working unit 10, a control unit 20, and a connecting unit 30 having opposite ends respectively connected to the working unit 10 and the control unit 20.
 35 The working unit 10 includes a support device capable of turning about a first axis 11 perpendicular to the axis 31 of the